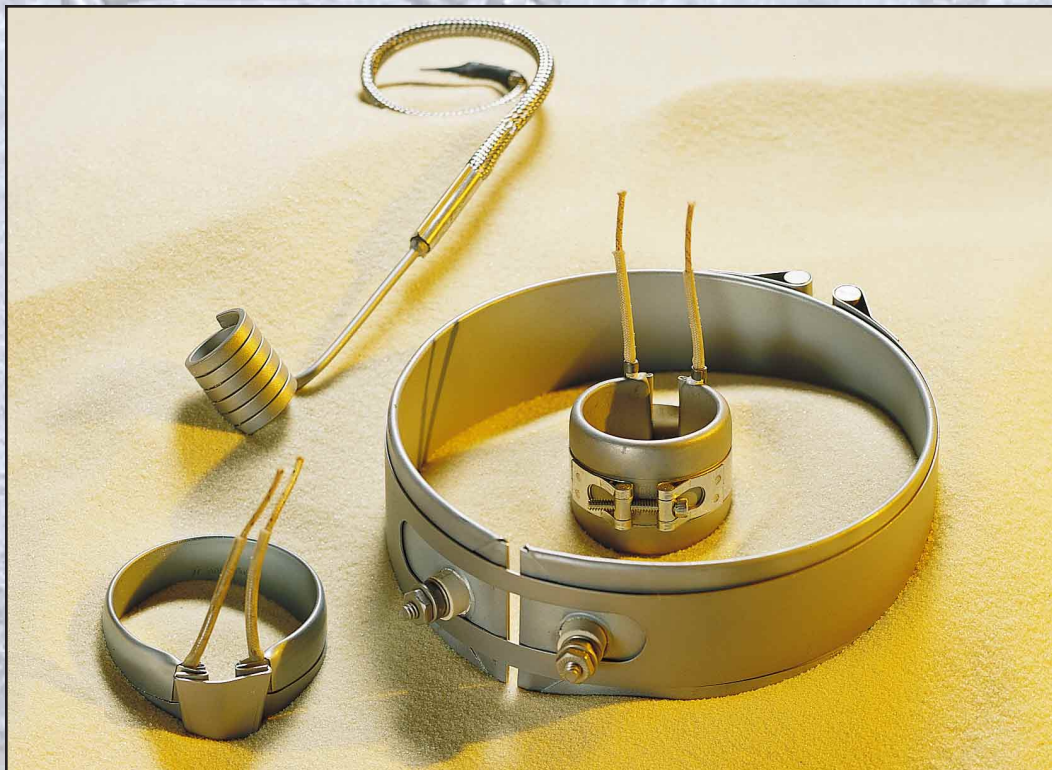


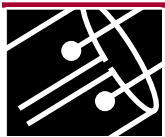
# B A N D H E A T E R S



As sophisticated as the advanced resins  
they work with—Fast Heat's patented  
Better Band® heaters.

*fast*  *heat*®

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# MICA BAND HEATERS

## MICA BAND

Fast Heat's reliable, inexpensive Mica Band heaters are best suited for uses involving low to moderate temperatures. Mica Bands also offer a wide variety of termination and clamping styles.

Fast Heat's Mica Bands feature thin construction and high quality insulation for effective heat transfer and excellent dielectric qualities. Mica Bands can meet U.L./C.S.A. approval, use the chart on page 151 for reference and consult factory. If C.S.A. approval is required for lead wire, please notify Customer Service when ordering.

Mica Bands are available through QuickShip and Fast Track. Refer to page 2 for a complete description of these rapid delivery programs.

## APPLICATIONS

Ideally suited for plastics industry applications, the Mica Band can be used for heating commodity resins in injection molding machines, extruders and blow molding machines. Other applications can be found in the food and pharmaceutical industries or any situation in which efficient band heating is required.

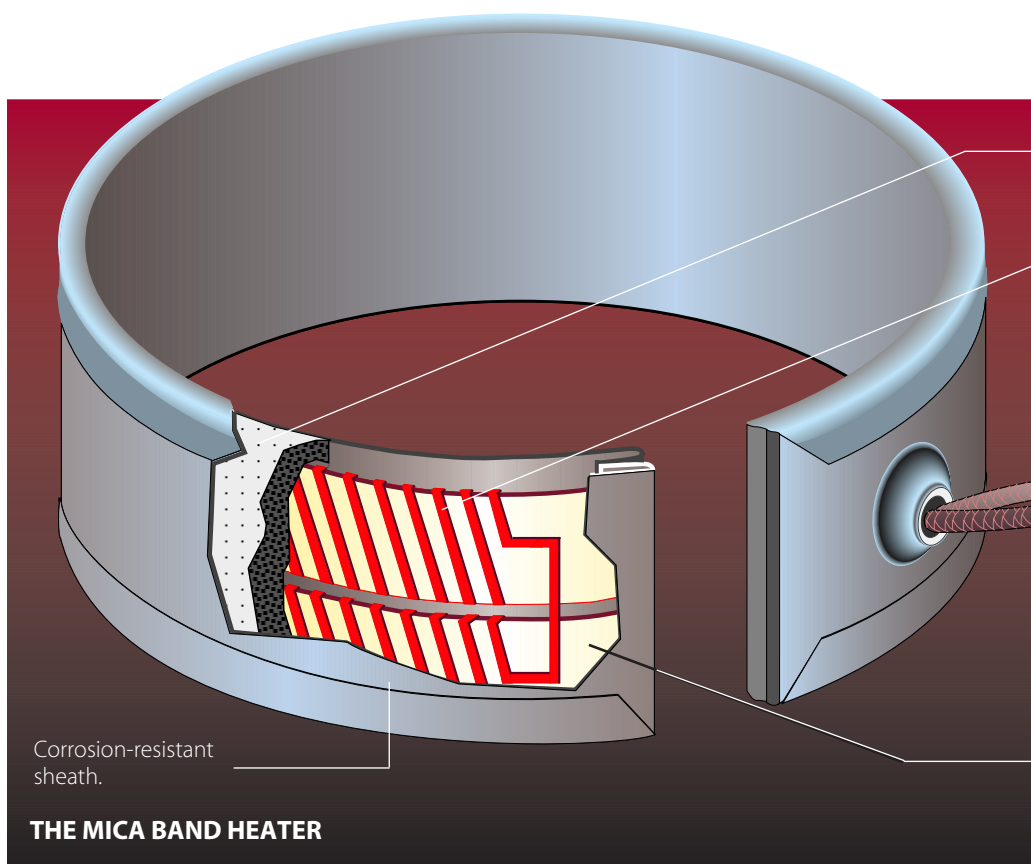
In addition, Mica Bands can be modified to meet the demands of virtually any special application. Our engineers can utilize a variety of alternative features and options to customize the heater to your specific needs.

## FEATURES AND BENEFITS

- Make a Fast Heat Mica Band your selection when price and quality is a consideration.
- Thin construction for effective heat transfer.
- Available for partial band applications.
- Reverse bands for application into rolls. Heating from the inside out.
- Expandable or two-piece construction.

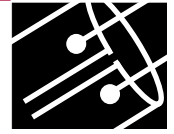
## MATERIAL AND CONSTRUCTION

- All heaters are computer designed.
- Designs consistently offer maximum resistor coverage.
- Ends of heaters incorporate folded-in lips to resist contamination.
- All bands are accurately rolled to the specified diameter for optimum contact.
- Reliable welded internal termination junction whether screw or lead terminals are specified.
- A variety of lead protection systems are available to protect against flexing, abrasion and contamination.
- High quality mica used in all designs.
- Oxidation-resistant metal enclosures.
- U.L. and C.S.A. (please specify) approved lead wires.



THE MICA BAND HEATER

# MICA/VALUE BAND HEATERS



## MICA BAND SPECIFICATIONS

Designs available up to 480 volts AC.

Resistance tolerance +10% -5%. Note that the tolerance is based on the heater in operation. The resistance at room temperature is generally 5% lower than while operating.

Diameters from 1" (25.4 mm) up to 60" (152.4 cm) typical.

Widths from 3/4" (19 mm) up to 18" (45.7 cm) typical.

## VALUE BAND

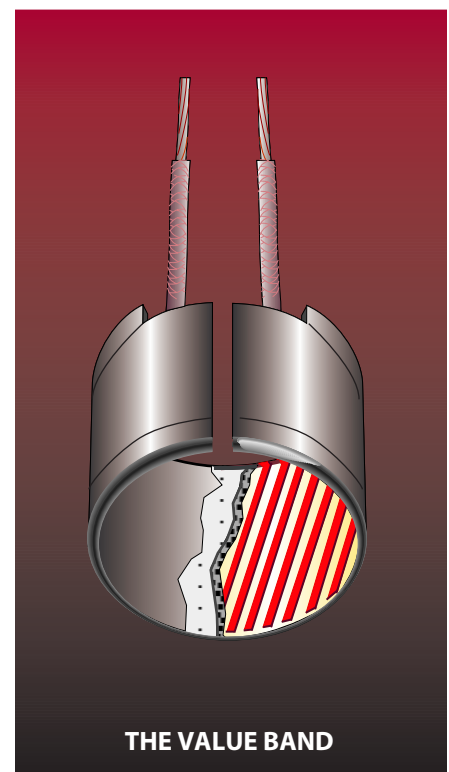
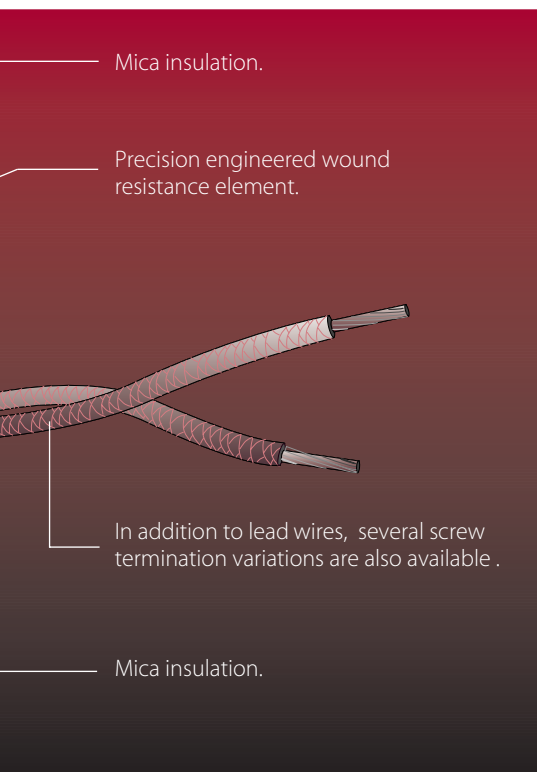
Fast Heat introduced the Value Band in 1993. The goal was to create an extremely low-cost, dependable nozzle band that could be used in many different applications.

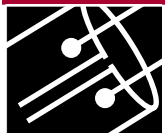
In order to expedite the manufacturing process and keep costs down, the Value Band is offered in a single termination style: 10" (25.4 cm) of fiberglass-insulated, nickel lead wire. The Value Band is C.S.A. approved and is backed by a one year "no problem" warranty.

Value Bands are available through QuickShip. Refer to page 2 for a complete description of this rapid delivery program.

## FEATURES AND BENEFITS

- Capable of temperatures up to 900° F (482° C)
- Leads are specially constructed so that they can be bent 90° allowing the heaters to be butted against one another in multiple band applications. The lead areas have also been reinforced to make them more durable and resistant to pull.
- Corrosion-resistant sheath to minimize oxidation.





# BAND HEATERS

## BAND HEATER SELECTION

Prior to selecting a band heater style for an application, there are a number of items that must be taken into consideration. These include type of application, operational temperature, controls and heat required to continually satisfy the application. All band heaters have their own physical and operational characteristics and limitations which should be reviewed prior to making a selection. For assistance with calculating the wattage requirement for an application, see the Reference Guide section of this catalog, starting on page 150. Once the total wattage requirement has been established, the number of heaters needed can be determined.

### TOTAL WATTAGE

### NUMBER OF HEATERS

- Knowing the maximum watts per square inch of the heater is essential when making your selection and can be calculated by:

### ONE-PIECE HEATER

$$W_{/IN^2} = \frac{\text{Wattage of Heater}}{[(\text{Heater ID} \times 3.14) - \frac{1}{2}"] \times \text{Heater Width}}$$

### ID & WIDTH IN CM.

$$W_{/CM^2} = \frac{\text{Wattage of Heater}}{[(\text{Heater ID} \times 3.14) - 1.3 \text{ cm}"] \times \text{Heater Width}}$$

### TWO-PIECE HEATER

$$W_{/IN^2} = \frac{\text{Wattage of Heater (per half)}}{\left[ \left( \frac{\text{Heater ID} \times 3.14}{2} \right) - \frac{1}{2}"] \times \text{Heater Width}}$$

### ID & WIDTH IN CM.

$$W_{/CM^2} = \frac{\text{Wattage of Heater (per half)}}{\left[ \left( \frac{\text{Heater ID} \times 3.14}{2} \right) - 1.3 \text{ cm}"] \times \text{Heater Width}}$$

\* average gap size

Example: 1) ID = 4" (10.2 cm), Heater Width = 2" (5.1 cm), One-piece heater, wattage = 400

$$\frac{400 \text{ Watts}}{[(4" \times 3.14) - \frac{1}{2}"] \times 2"} = 16.575 \frac{\text{Watts}}{\text{Inch}^2}$$

### ID & WIDTH IN CM.

$$\frac{400 \text{ Watts}}{[(10.2 \times 3.14) - 1.3] \times 5.1} = 2.55 \frac{\text{Watts}}{\text{CM}^2}$$

Example: 2) ID = 4" (10.2 cm), Heater Width = 2" (5.1 cm), Two-piece heater, wattage = 400 each half

$$\frac{400 \text{ Watts}}{\left[ \frac{(4" \times 3.14)}{2} - \frac{1}{2}"] \times 2"} = 34.583 \frac{\text{Watts}}{\text{Inch}^2}$$

### ID & WIDTH IN CM.

$$\frac{400 \text{ Watts}}{\left[ \frac{(10.2 \times 3.14)}{2} - 1.3 \right] \times 5.1} = 5.33 \frac{\text{Watts}}{\text{CM}^2}$$

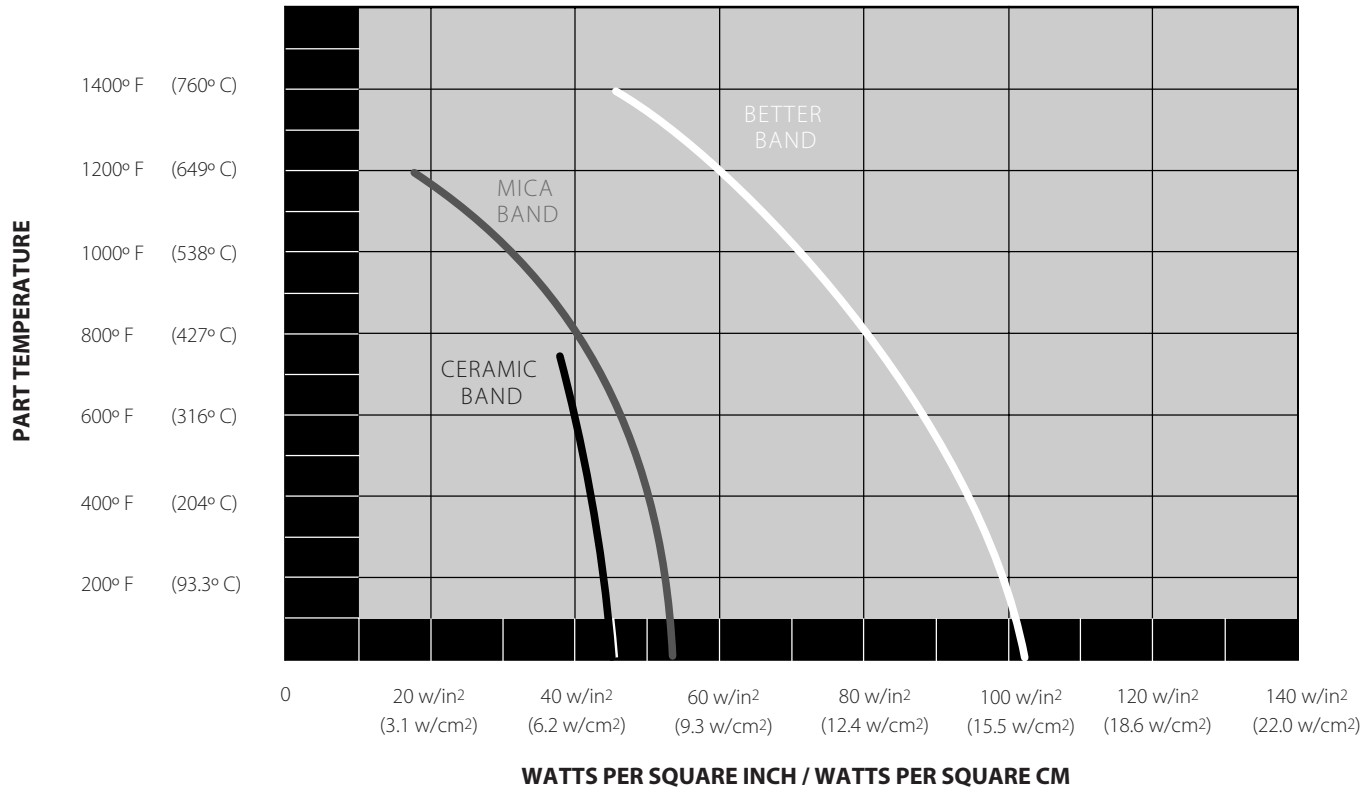
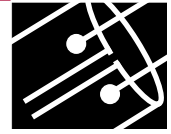
- Holes, notches, two-piece heaters and special gaps all reduce the effective heating surface of a heater and must be taken into account when estimating the heated surface used to calculate the watts per square inch of the heater.
- Factors to be considered when calculating heater area:
  - Holes
  - Notches
  - One- or two-piece
  - Special gap
- Use the accompanying graph to make sure that watt density does not exceed the normally recommended maximum.
  - Locate your established maximum cylinder or part temperature on the left side of the graph.
  - Follow the horizontal line to the intersection of the curve relating to the heater style selected and read directly down to the recommended maximum watt density.

## ORDERING GUIDE

For better customer service, the following information will be needed when placing an order:

- Your customer number, if you have been assigned one.
- Your P.O. number.
- Shipping instructions.
- Our catalog number or: product line, inside diameter, width, 1 pc. or 2 pc. construction, total watts, volts (each half if applicable), type of termination and any special features you require.
- Customer Service will provide you with a configuration number. Please record this for future reference.
- Specify the quantity you wish to order and whether or not your order is taxable.





## OPTIMIZE HEATER PERFORMANCE

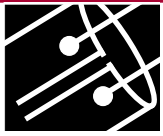
- During the first heating cycle, it is advisable to retighten the clamping mechanism of the heater for optimum contact. (De-energize the heater, retighten and repower the heater.)
- Select your heater using the procedure outlined in the ordering guide. Verify that the wattage chosen corresponds to the application requirements. Improperly chosen wattages create temperature over-shoot, excessive cycling and a general decrease in application efficiency.
- Use several narrow band heaters rather than one wide band to obtain the most trouble-free operation. Lab tests have shown the narrow band design to be the most efficient and reliable design.
- Heater I.D. must conform to your cylinder diameter for the best possible fit. Poor fit results in decreased operating efficiency and heater life.

- Tighten heater clamps for the best heat transfer to cylinder. Poor clamping causes decreased heater life and increased heat loss.
- Ensure that your cylinder is smooth and free of foreign material for best clamping and operating results.
- Use one-piece heaters only when they can be slipped over the end of the cylinder. If opening the heater is an installation necessity, use two-piece heaters.
- Avoid possible contamination. Do not allow carbonizing materials such as plastic and oil to collect on heaters. Contamination can lead to internal electrical shorts.
- Use special care in selection of leads and terminals when physical abuse cannot be avoided. If special lead arrangements are required, contact Fast Heat.

## LAB TESTED AND FIELD PROVEN CAPABILITIES

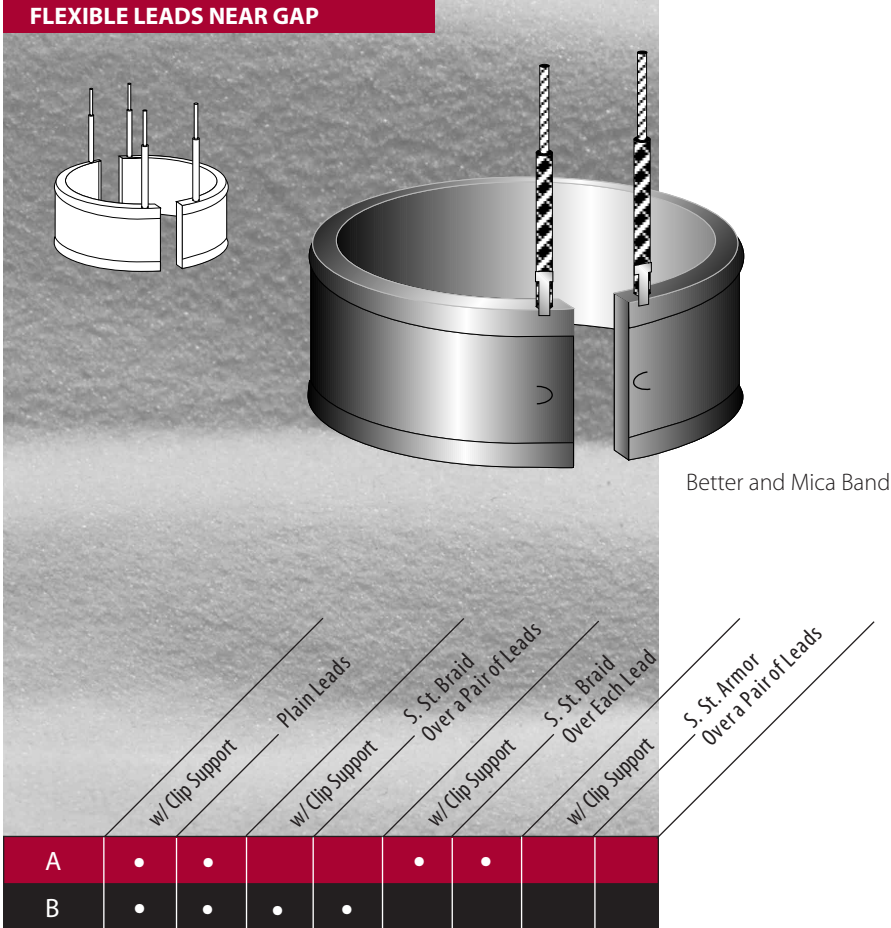
To verify total life characteristics of the Better Band, a multitude of accelerated life tests have been performed. Under severe operating conditions, including the combination of 1400° F (760° C) band temperatures and watt densities in excess of 100 w/in² (15.5 w/cm²), the Better Band has survived thousands of hours of operation without failure.

Field testing of the Better Band in typical high temperature plastic molding situations and in applications as extreme as die casting nozzles has further proven the Better Band to be the most advanced band heater available.



# BETTER & MICA BAND HEATERS

## FLEXIBLE LEADS NEAR GAP



Better and Mica Band

Bands are available with leads exiting axially on each side of the gap.

Supplied with full contact clamping for longer heater life.

10" (25.4 cm) leads standard, other lengths available.

See chart A.



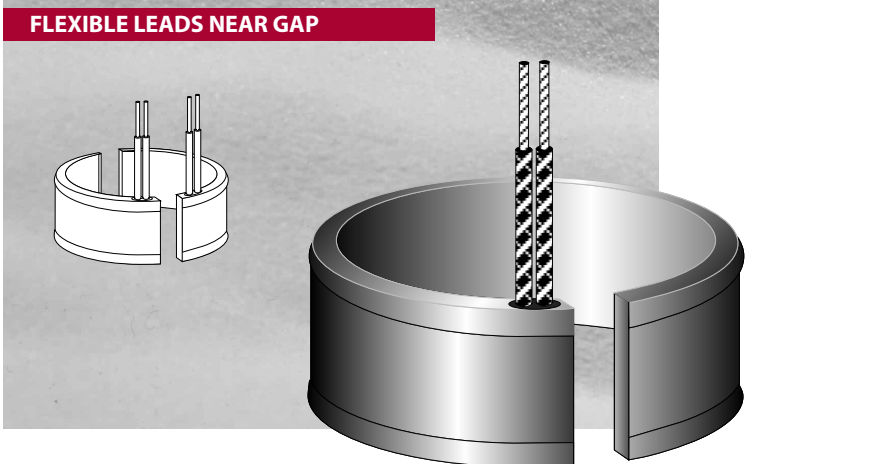
## TWO-PIECE HEATERS

- Specify for easy installation/removal where projections or tandem positioned heaters are in use.
- When using two-piece heaters, each half is designed with half of the total wattage requirement. This has the capability of being used on either 120 Volts ( $V_1 = V_2 = V_{\text{Total}}$ ) when connected in parallel or 240 Volts ( $V_1 + V_2 = V_{\text{Total}}$ ) when connected in series.



This heater termination style available.

## FLEXIBLE LEADS NEAR GAP



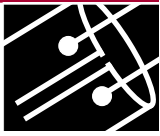
Better and Mica Band

Leads exiting axially on one side of gap supplied with full contact clamping for longer heater life.

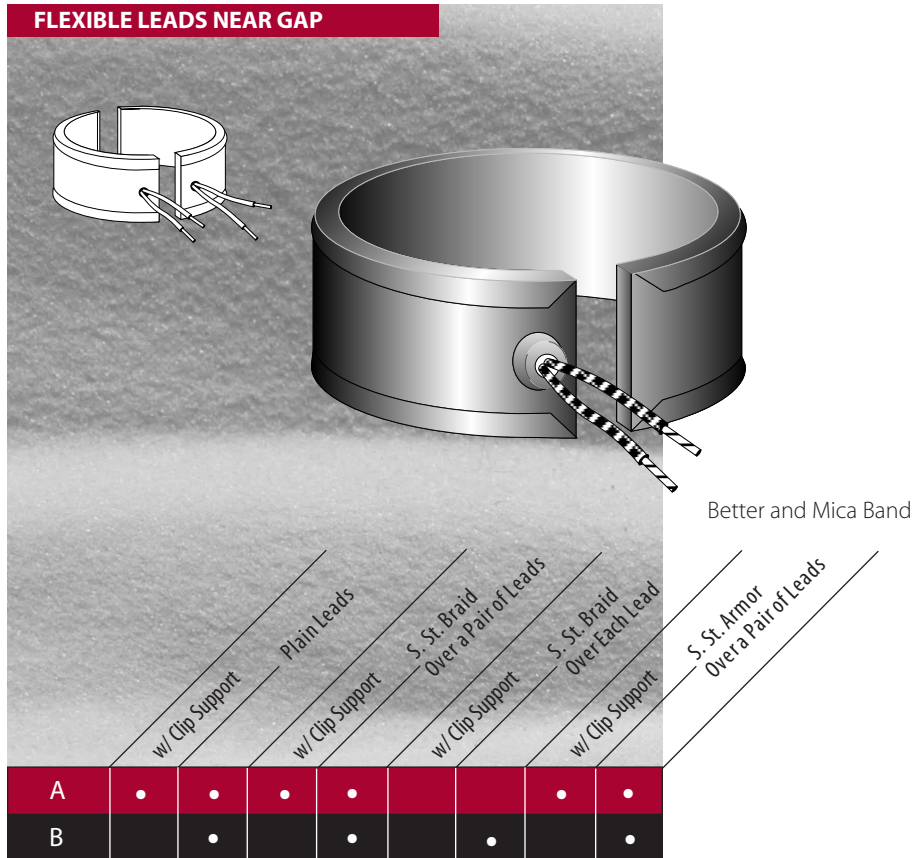
10" (25.4 cm) leads standard, other lengths available.

See chart B.

# BETTER & MICA BAND HEATERS



## FLEXIBLE LEADS NEAR GAP



Leads exit along the width on one side near the gap.

10" (25.4 cm) leads standard, other lengths available. Standard lead exit.

This style of lead exit can be selected when there is minimum clearance around the heater.

As with all lead type heaters, variations of lead protection and support are available.

See chart A.



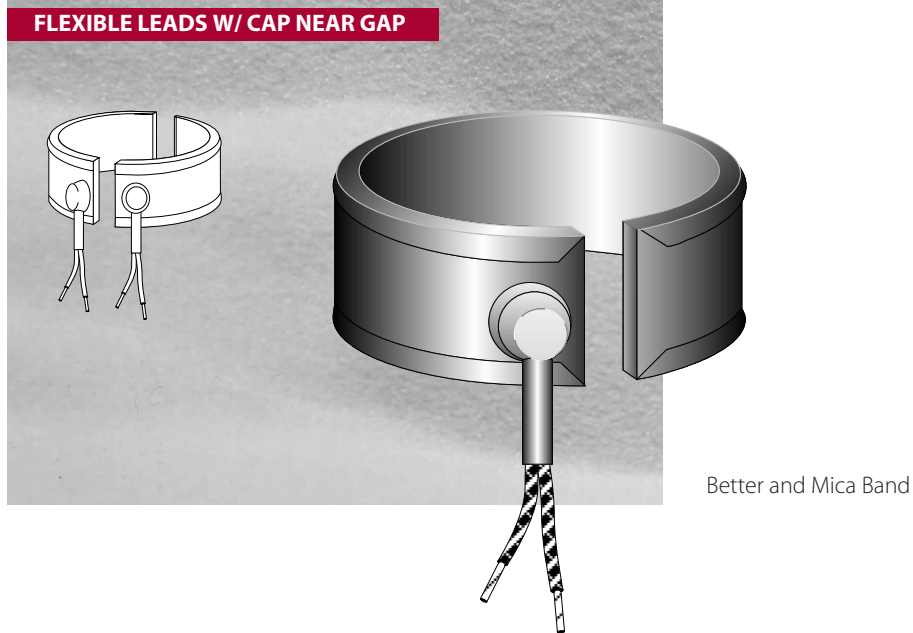
### GROUND WIRE

- A ground wire is available on most heaters where grounding is required.
- Consult Fast Heat for details.



This heater termination style available.

## FLEXIBLE LEADS W/ CAP NEAR GAP

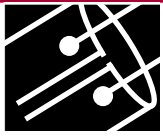


Low profile cap with leads exiting axially through cap and tube near the gap.

10" (25.4 cm) leads standard, other lengths available.

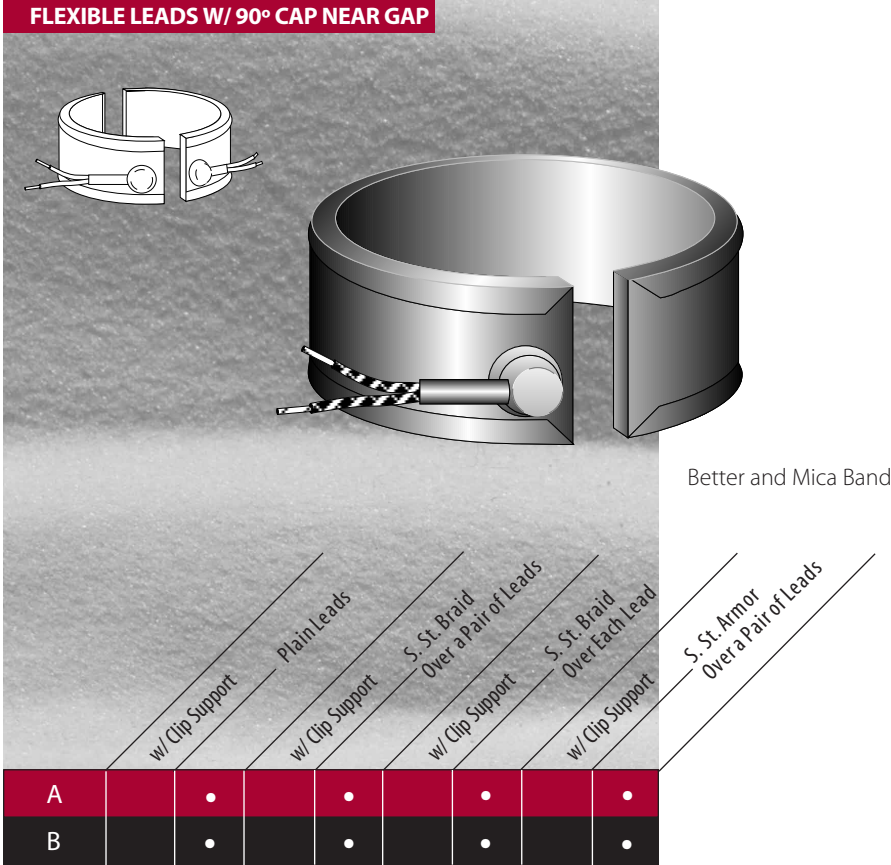
Leads exit in direction of junction/termination. If heaters are in tandem, they can be positioned next to one another.

See chart B.



# BETTER & MICA BAND HEATERS

## FLEXIBLE LEADS W/ 90° CAP NEAR GAP



Low profile cap with leads exiting 90° to axis through cap and tube along length.

Ideal for installations where access is limited.

10" (25.4 cm) leads standard, other lengths available.

See chart A.



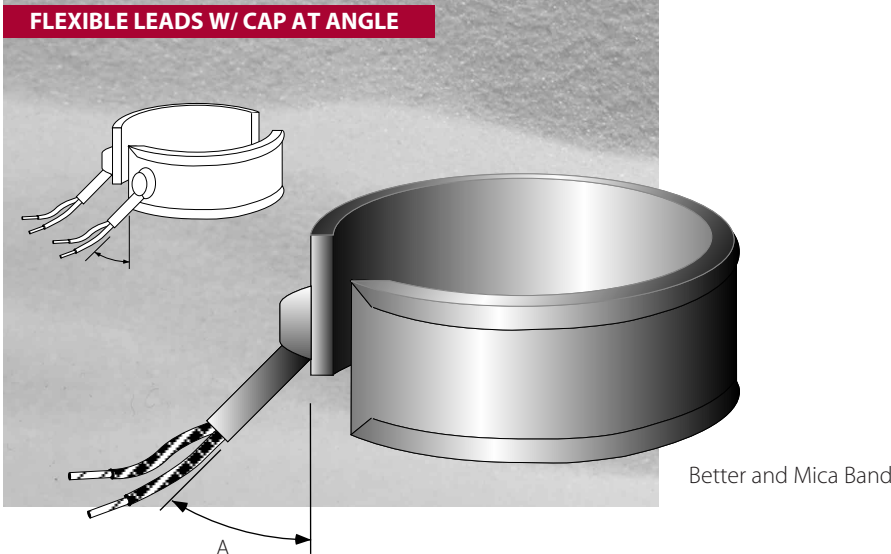
### CAP AND TUBE

- Cap and tube exit of leads provides a substantial and contamination resistant exit from the heater.
- In nozzle or similar applications where heaters are close to one another, the upward angle of the tube directs the leads over the adjacent heater, thus preventing the leads from contacting the hot surface.



This heater termination style available.

## FLEXIBLE LEADS W/ CAP AT ANGLE



Leads exiting through cap and tube near gap. Angle of tube may be specified at 15°, 30° or 45°.

10" (25.4 cm) leads standard. Other lengths available.

Please specify angle (A) of tube.

See chart B.

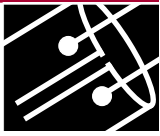


### LEAD PROTECTION

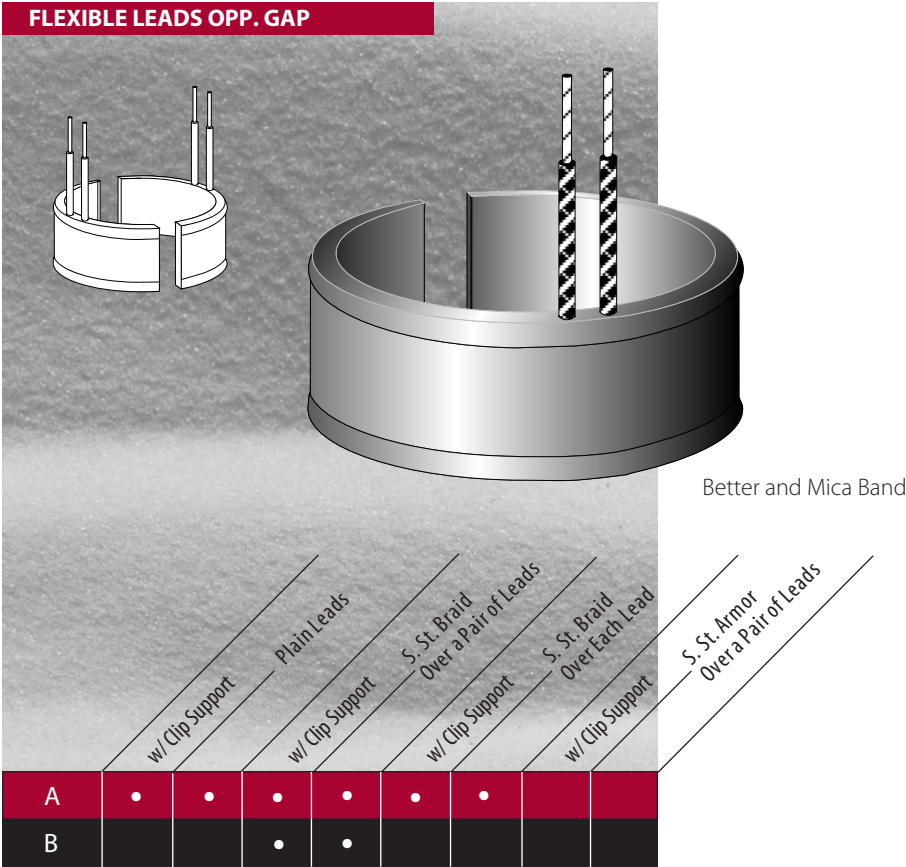
- Armor and braid are accessories that may be added to protect the leads from abrasion and/or some forms of contamination.



# BETTER & MICA BAND HEATERS



## FLEXIBLE LEADS OPP. GAP



Leads exiting axially from thickness opposite the gap.

10" (25.4 cm) leads standard, other lengths available.

These heaters are generally specified when clearance around the heater is not adequate to allow the lead to exit from the heater pressure plate.

See chart A.



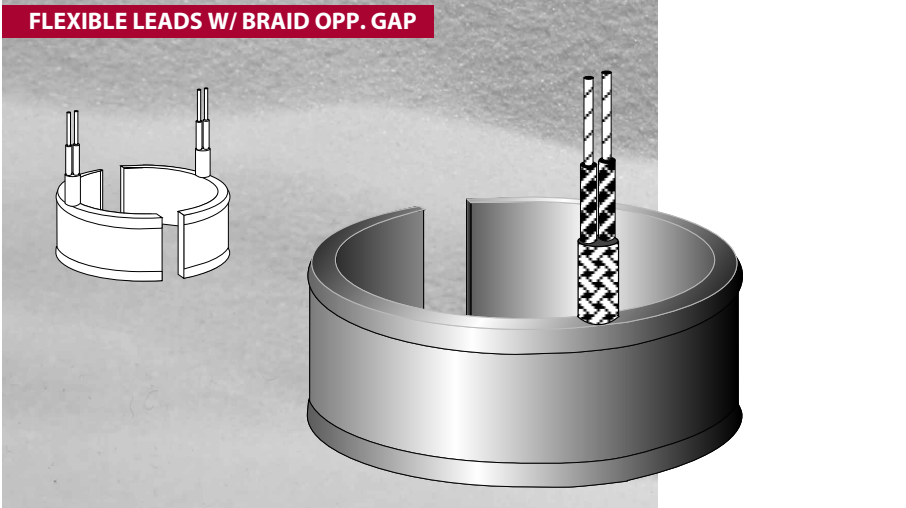
### CLIP SUPPORT

- Clip supports may be specified on many lead wire exits to reduce straining of the lead junction.
- Clip supports are standard on all Better Band heaters.
- Consult Fast Heat for details.



This heater termination style available.

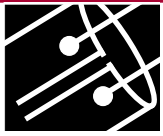
## FLEXIBLE LEADS W/ BRAID OPP. GAP



Two leads in one braid exiting axially from thickness opposite the gap.

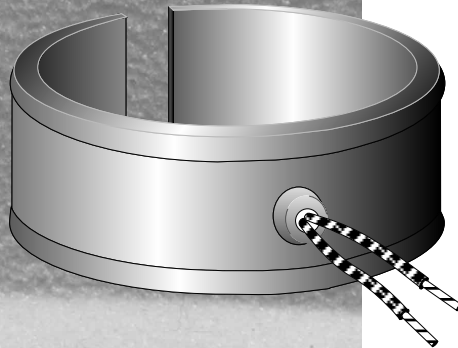
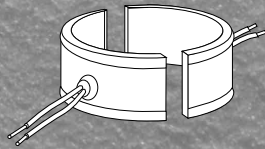
10" (25.4 cm) leads standard, other lengths available.

See chart B.



# BETTER & MICA BAND HEATERS

## FLEXIBLE LEADS OPP. GAP



Better and Mica Band

	w/ Clip Support	Plain Leads	w/ Clip Support	S. St. Braid Over a Pair of Leads	w/ Clip Support	S. St. Braid Over Each Lead	w/ Clip Support	S. St. Armor Over a Pair of Leads
A	•	•	•	•	•	•	•	•
B		•		•		•		•

Standard lead exit opposite the gap.

10" (25.4 cm) leads standard, other lengths available.

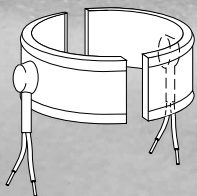
Cap is welded onto sheath. Various lead protection options are available.

See chart A.



This heater termination style available.

## FLEXIBLE LEADS W/ CAP OPP. GAP



Better and Mica Band

Leads exiting axially through cap and tube opposite the gap.

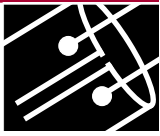
10" (25.4 cm) leads standard, other lengths available.

Cap and tube give protection near the sheath.

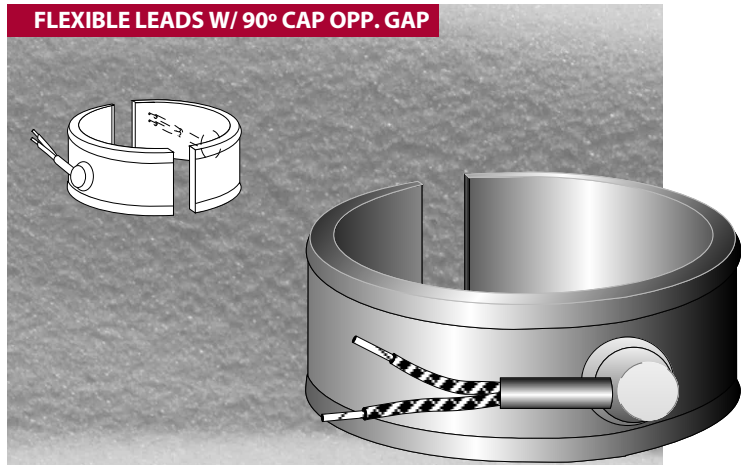
Additional protection is available.

See chart B.

# BETTER & MICA BAND HEATERS



## FLEXIBLE LEADS W/ 90° CAP OPP. GAP



Leads exiting through cap and tube along length opposite the gap.

10" (25.4 cm) leads standard, other lengths are available.

Cap and tube give protection near the sheath.

Available in both Mica and Better Band constructions.

See chart A.

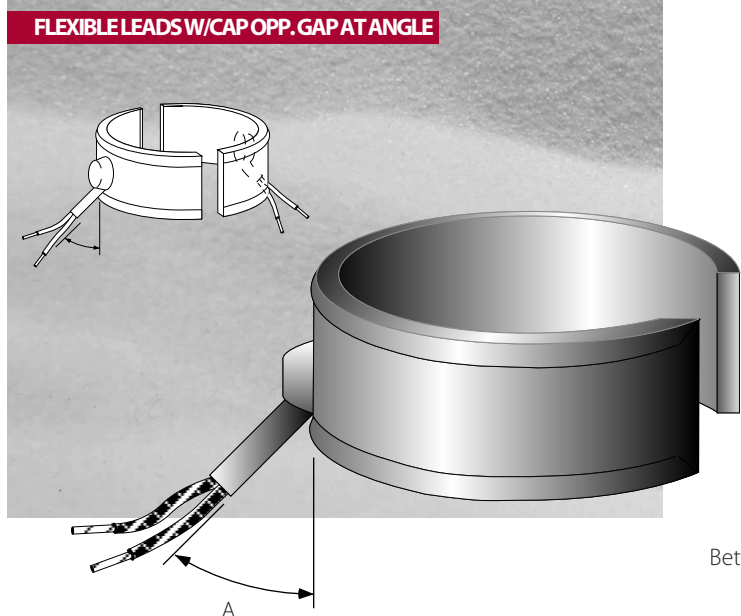
Better and Mica Band

	w/ Clip Support	Plain Leads	w/ Clip Support	S. St. Braid Over a Pair of Leads	w/ Clip Support	S. St. Braid Over Each Lead	w/ Clip Support	S. St. Armor Over a Pair of Leads
A	•	•	•	•	•	•	•	•
B	•	•	•	•	•	•	•	•



This heater termination style available.

## FLEXIBLE LEADS W/ CAP OPP. GAP AT ANGLE



Leads exiting through cap and tube opposite gap.

Having the lead exit/tube raised up at an angle allows heaters to be positioned immediately next to one another without having the leads come in contact with the adjacent heater.

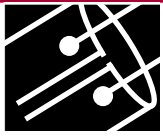
The angle of tube may be specified at 15°, 30° or 45°.

10" (25.4 cm) lead standard. Other lengths available. Please specify angle "A" of tube.

Additional protection is available.

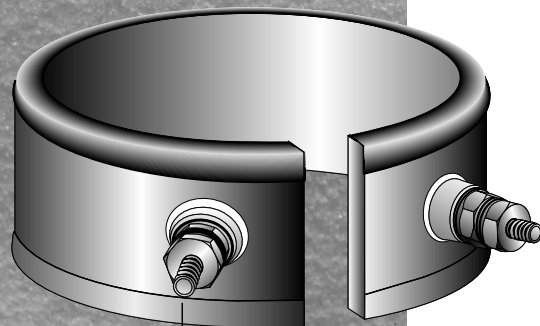
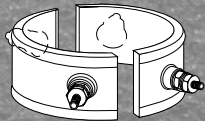
See chart B.

Better and Mica Band



# BETTER & MICA BAND HEATERS

## SCREW TERMINALS



Better and Mica Band

Width 7/8" - 1 3/16" (22.2-30.2 mm)  
Under 15 Amps

Width 1 1/4" (31.8 mm) or More  
Under 20 Amps

Width 1 1/4" (31.8 mm) or More  
Over 20 Amps

A	8-32 Thread	10-24 Thread	1/4-20 Thread
B	8-32 Thread	10-24 Thread	1/4-20 Thread

Band with screw terminals on top; one on each side of gap.

This permits easy connection to power leads w/lugs.

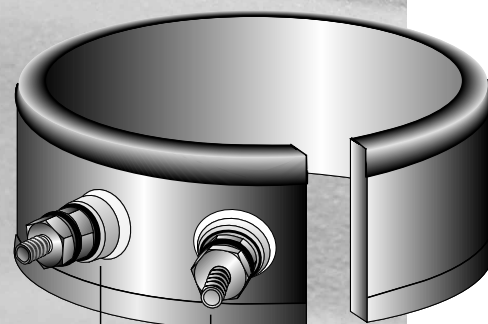
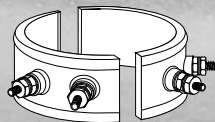
See chart A.



## SCREW TERMINALS

- Screw terminals are specified when user wants to provide their own wiring harness.
- Replacement is easier in case of heater failure.
- Junction boxes can be placed over the terminals for protection.

## SCREW TERMINALS



Better and Mica Band

7/8" Ref. (22.2 mm) 3/4" Ref. (19.05 mm)

Band has two screw terminals on one side, near gap, along the length of the heater.

Simplifies lead wire connections.

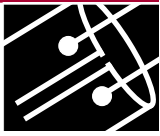
Available in Better Band and Mica Band construction.

See chart B

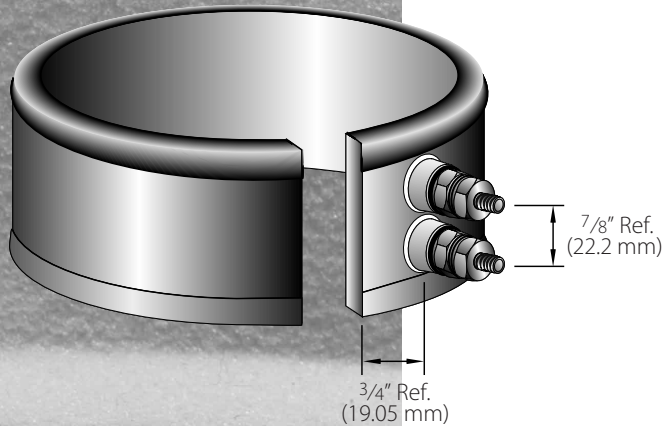
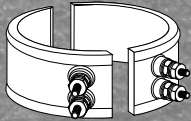
European plug is available for bands larger than 4" (101.6mm) I.D.



# BETTER & MICA BAND HEATERS



## SCREW TERMINALS



Better and Mica Band

Width 2" (50.8 mm) or More  
Under 20 Amps

Width 2" (50.8 mm) or  
More  
Over 20 Amps

A	10-24 Thread	1/4-20 Thread
B	10-24 Thread	1/4-20 Thread

Band has pair of screw terminals axially on one side, near gap, along the width of the heater.

Available in both Better Band and Mica Band constructions.

See chart A.

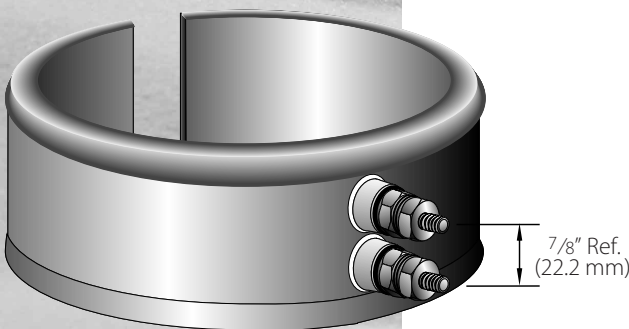
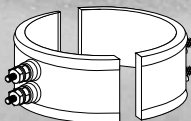
European plug is available on heaters with a minimum width of 2" (50.8mm).



### GROUND STUD

- An optional ground stud is available on most bands to permit grounding wire connection.
- Consult Fast Heat for details.

## SCREW TERMINALS



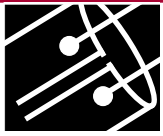
Better and Mica Band

Band has pair of screw terminals axially opposite gap, along the width of the heater.

Available in both Better Band and Mica Band construction.

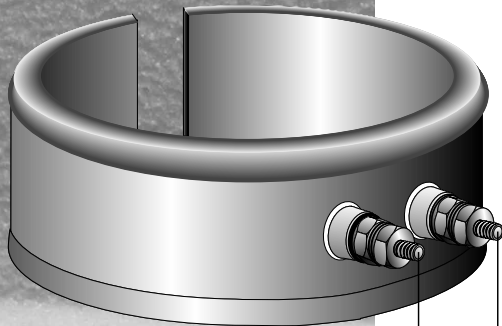
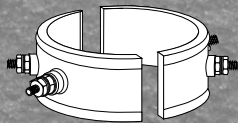
See chart B.

European plug is available on heaters with a minimum width of 2" (50.8mm).



# BETTER & MICA BAND HEATERS

## SCREW TERMINALS



7/8" Ref.  
(22.2 mm)

Better and Mica Band

Width 7/8" - 1 3/16" (22.2-30.2 mm)  
Under 15 Amps

Width 1 1/4" (31.8 mm) or More  
Under 20 Amps

Width 1 1/4" (31.8 mm) or More  
Over 20 Amps

A

8-32 Thread

10-24 Thread

1/4-20 Thread

Band has pair of screw terminals along length of heater. This permits easier wire connections.

Available in both Better Band and Mica Band construction.

See chart A.

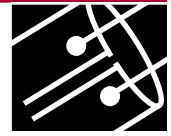
European plug is available for bands larger than 4" (101.6mm) I.D.



## THERMOCOUPLE

- Thermocouples are available as options for many of the bands shown.
- Typically type "J" thermocouples are used; however, contact Fast Heat for your special requirement.
- Thermocouples can be positioned on the sheath as required. Depending upon the heater design, the thermocouple can also be positioned within the heater.
- Contact Fast Heat with your special requirement.

# OPTIONS BAND HEATERS



## PLAIN LEADS



Jacketed for continuous service up to 482° F (250° C) with nickel standard conductors. It is recommended to use Monel® lugs.

High temperature mica tape lead wire is suitable up to 842° F (450° C) max. with nickel stranded conductors. Outer jacket is glass Teflon® finish. The use of Monel® lugs is recommended.

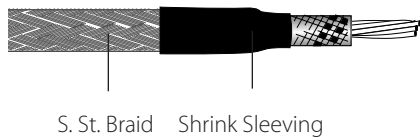
Better Band comes standard with mica tape. Mica Band comes standard with fiberglass.

## SLEEVING



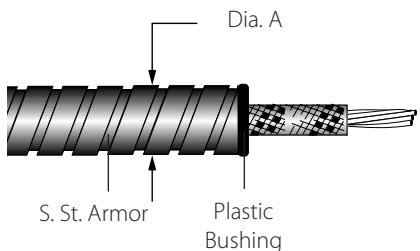
Fiberglass silicone rubber coated sleeving class c -1, 392° F (200° C ) service. Provides extra insulation where wire is exposed to heat, molten plastics or abrasion. Rated 1500 volts at 428° F (220° C), except 5/16" (7.9 mm) size which has no voltage rating. This size used primarily to enclose multiple insulation wires in heat and abrasion resistant covering.

## S. ST. BRAID



Stainless steel over braid is most commonly specified in applications where leads may be subjected to abrasion due to movement of the application. Lead wires may be rubbing together or passing over sharp objects.

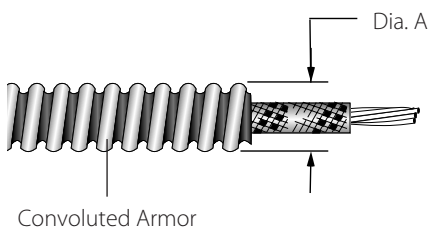
## S. ST. ARMOR



Used over leads in areas where more protection is necessary. Selected for similar applications as the stainless steel braid, in addition to applications where non-fluid contamination may come in contact with the leads. This lead protection is not as flexible as over the braid.

Stainless steel square lock construction.

## CONVOLUTED ARMOR



This is a seamless product and can be attached to the heater so that fluids do not contaminate the leads. This system of lead protection is generally associated with the Fast Heat "Sealed Band" construction. Not recommended where leads are flexed in the application.

## 300 VOLTS 418° F (250° C) FIBERGLASS LEAD WIRE

GAGE	MAX. CURRENT @ 392° F (200° C)
16	6.6 amps
18	5.2 amps
20	3.7 amps
22	2.8 amps

## 600 VOLTS 418° F (250° C) FIBERGLASS LEAD WIRE

GAGE	MAX. CURRENT @ 392° F (200° C)
8	22.1 amps
10	16.5 amps
12	12.2 amps
14	9.0 amps
16	6.6 amps
18	5.2 amps
20	3.7 amps
22	2.8 amps

## 600 VOLTS 778° F (450° C) MICA TAPE LEAD WIRE

GAGE	MAX. CURRENT @ 392° F (200° C)
12	15.2 amps
14	11.3 amps
16	8.3 amps
18	6.4 amps
20	4.6 amps
22	3.4 amps

## 300 VOLTS 778° F (450° C) MICA TAPE LEAD WIRE

GAGE	MAX. CURRENT @ 392° F (200° C)
16	8.3 amps
18	6.4 amps
20	4.6 amps
22	3.4 amps

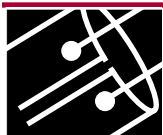


## TERMINATIONS

- Lead protection may be required where a problem of lead abrasion arises. This protection may be provided by the use of stainless steel wire braid or armor cable, both of which are firmly anchored to the heater and readily available in most sizes of heater bands.

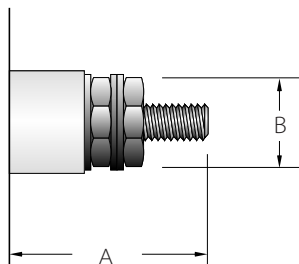
## FIBERGLASS SILICONE RUBBER COATED SLEEVING

SLEEVING SIZES (GA.)	I. D.
12	.085 in / 2.1 mm
10	.106 in / 2.6 mm
8	.133 in / 3.3 mm
6	.166 in / 4.2 mm
5	.190 in / 4.8 mm
3	.234 in / 5.9 mm
5/16	.313 in / 7.9 mm

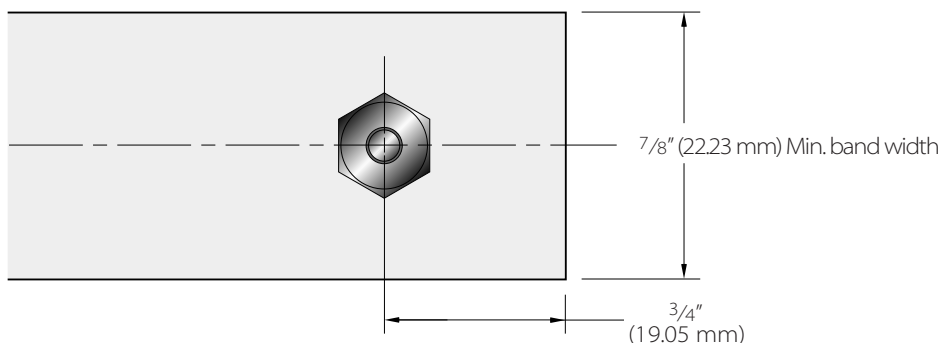


# OPTIONS BAND HEATERS

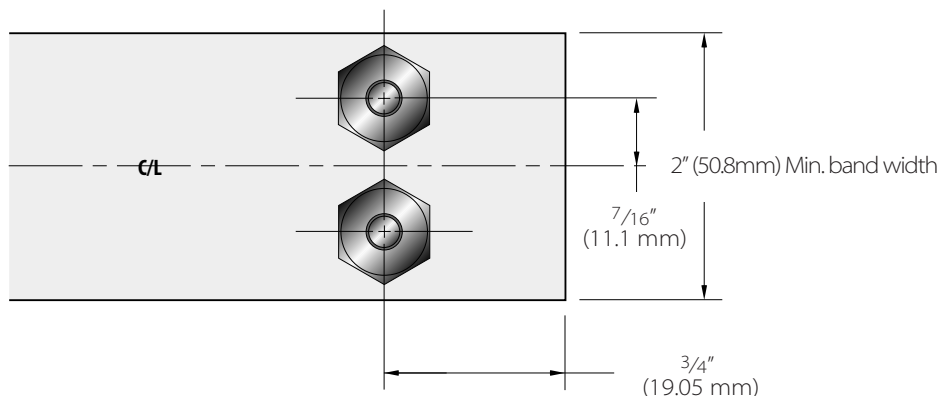
## TYPICAL SCREW TERMINAL



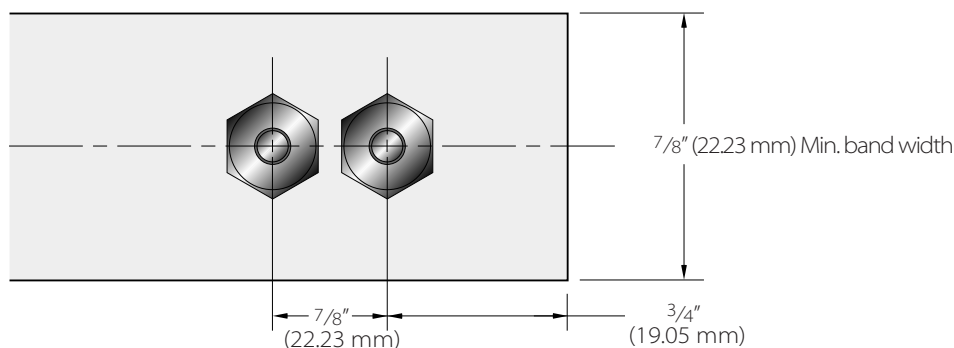
## SCREW TERMINAL (ON TOP)



## SCREW TERMINALS (ALONG THE WIDTH)



## SCREW TERMINALS (ALONG THE LENGTH)



## SCREW TERMINALS

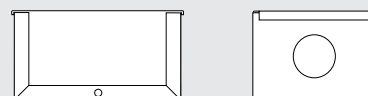
Terminals are a very convenient way of connecting our band heaters to power; typically, Monel® lugs are used to secure wiring.

Supplied when heater width is at a minimum or when, in application, a buss bar is used to connect the terminals of adjoining heaters.

SCREW SIZE	IN	A MM	B IN	B MM	MAX. AMPS
8-32	3/4	19.0	7/16	11.0	15
8-32	1	25.4	7/16	11.0	15
10-24	3/4	19.0	7/16	12.7	20
10-24	1	25.4	7/16	12.7	20
1/4-20	1	25.4	7/8	22.2	25



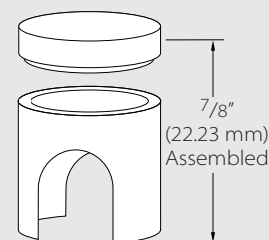
## TERMINAL BOX



- Used when screw terminals are employed in conjunction with box connector.



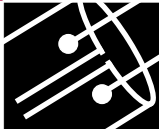
## CERAMIC COVER



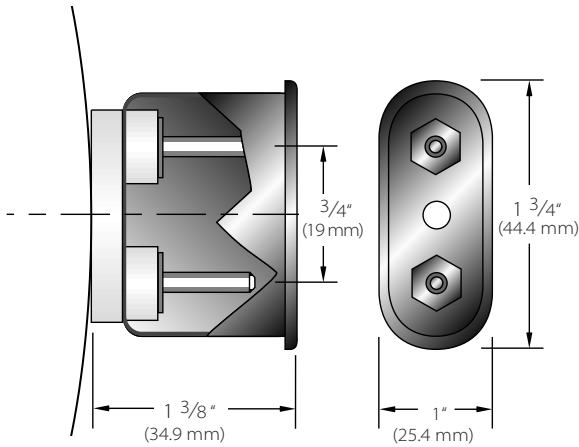
- Ceramic terminal cover fits Fast Heat size 10-24 threaded terminals.
- Requires 1" (25.4 mm) screw.



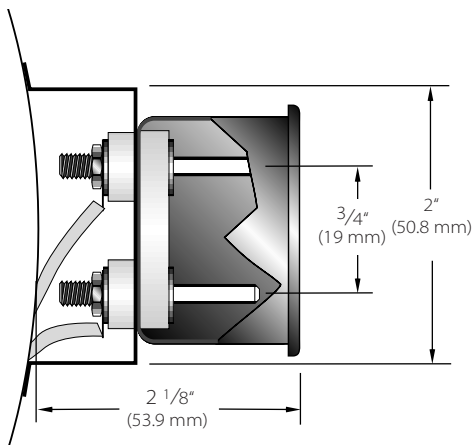
# OPTIONS BAND HEATERS



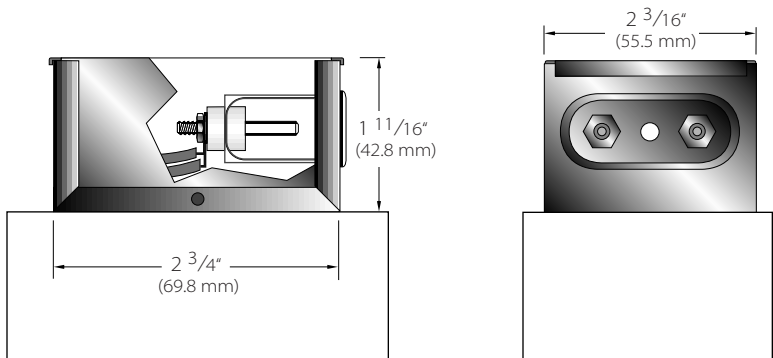
## EUROPEAN PLUG



## EUROPEAN PLUG W/BRACKET



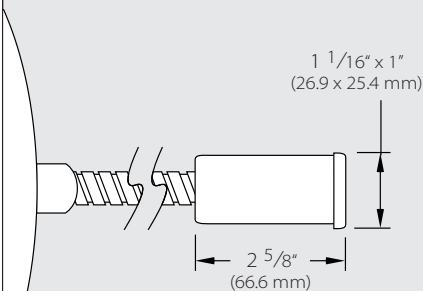
## EUROPEAN PLUG W/BOX



Plug is illustrated in the most common position. There are occasions for special boxes where the plug may be positioned on the top surface of the box.

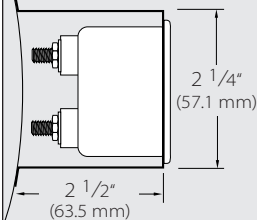


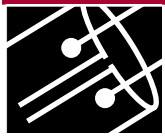
## EUROPEAN PLUG IN TUBE



• Shown here with S. St. Armor

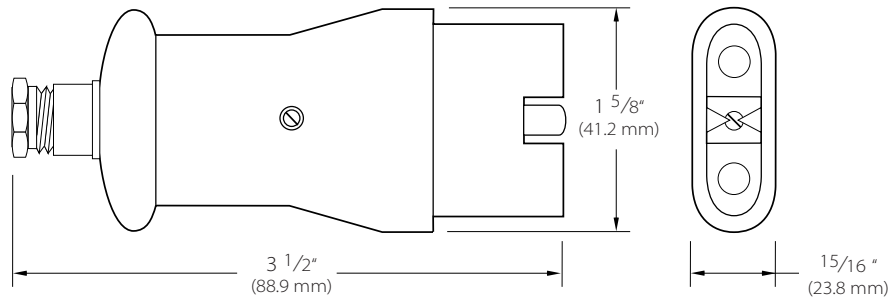
## EUROPEAN PLUG W/ BRACKET (INTERNAL MOUNT)





# OPTIONS BAND HEATERS

## QUICK-DISCONNECT PLUG



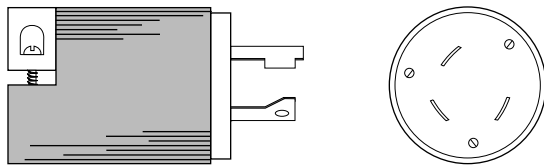
2 pole-25 amp-250V 600° F (315.5° C) service. Ideal for power connection to heaters.

Durable cast aluminum body on female side.

Both sides have ceramic insert insulators.

Ground connection via contact fingers.

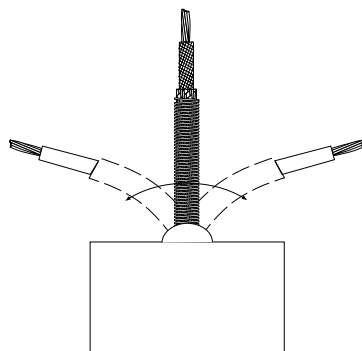
## HUBBELL® PLUG (OR EQUIVALENT)



Customer to specify type, part number and amperage required.

There is a wide variety of Hubbell plugs that can be fitted to our heaters. Please specify Hubbell's part number or call us for suggestions.

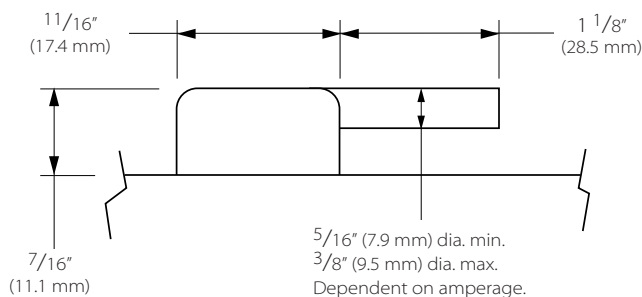
## RELIEF SPRING



This optional relief spring is welded to the terminal cap. It adds protection from abrasion while keeping the leads very flexible.

Specify length. Maximum length: 12" (30 cm)

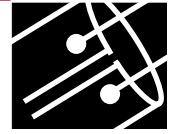
## CAP AND TUBE



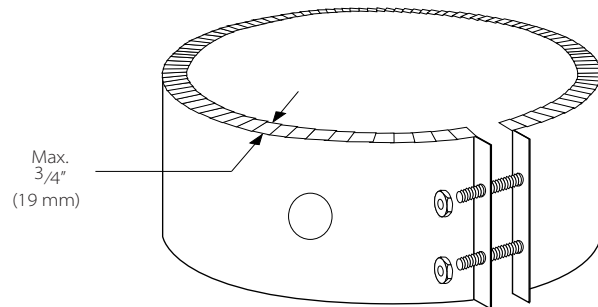
## SILICONE RUBBER QUICK-DISCONNECT PLUG

- This all-silicone rubber disconnect plug is generally selected for applications in which the plug is frequently disconnected, thus submitting the plug to possible damage such as cracking the ceramic.
- When selecting, be aware of the temperature limitation of silicone rubber.
- Available in straight, as in adjoining picture and at right angle exit for low profile.

# OPTIONS BAND HEATERS



## SHROUD (INSULATED/ NON-INSUL.)



The insulated shroud is available as an accessory or attached to the heater.

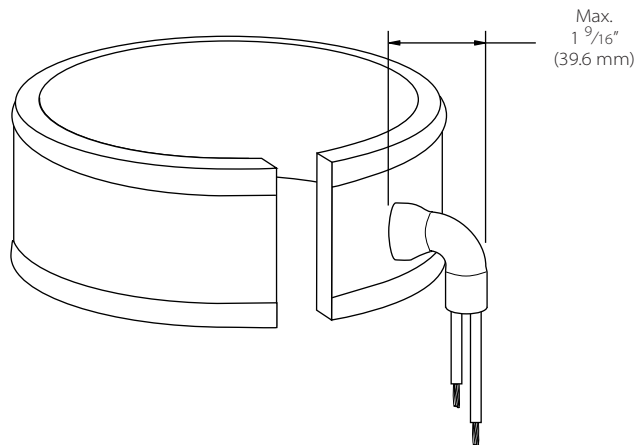
Insulated shroud conserves energy and reduces power consumption.

Available with one- or two-piece Mica Band and Better Band construction.

A wide variety of terminations are available.

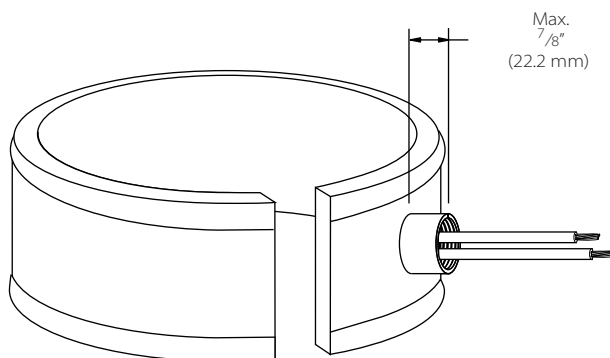
Fiberfrax insulation optional.

## COPPER ELBOW



The copper elbow is selected when the leads are required to exit the heater in a definite direction and away from the heater surface.

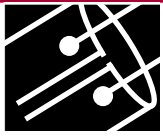
## PIPE COUPLING



Available in stainless steel or galvanized steel.

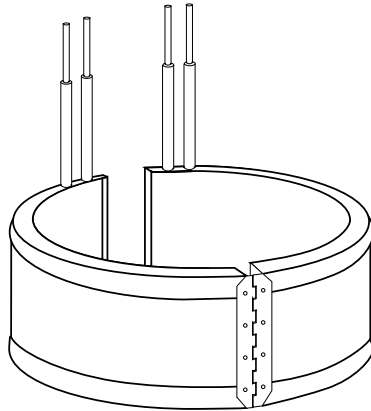
These pipe couplings, welded to the band heater sheath, provide a method of fastening conduit or armor to the heater which can be disconnected from the heater as required.

Typical sizes are  $\frac{3}{8}$ " (9.5 mm) and  $\frac{1}{2}$ " (12.7 mm) NPT.



# OPTIONS BAND HEATERS

## HINGED BAND

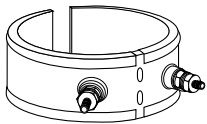


Mica and Better Band

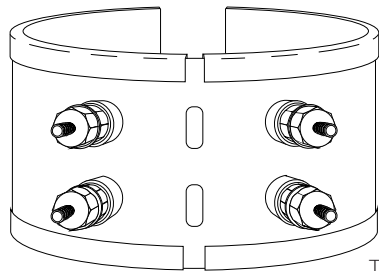
Available in two-piece heaters for applications in which the assembly is frequently required to be opened for easy and registered positioning around the surface.

A variety of termination styles are available.

## EXPANDABLE BAND



One Piece Mica Band

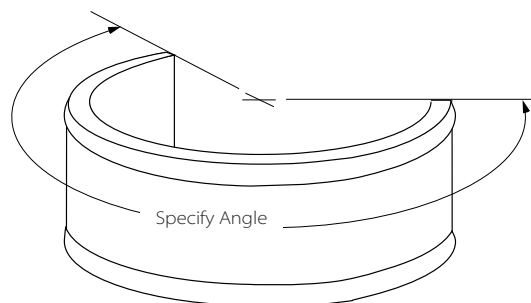


Two Piece Better Band

A heater which can be easily expanded to fit around a surface. Not for applications requiring consistent removal. (2-3 times max.)

Separate full clamping strap provides excellent clamping. Can be expanded 2-3 times without parting.

## PARTIAL BAND



Mica and Better Band

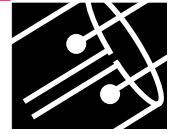
Available in a variety of terminations and clamping styles (please indicate when ordering).

Specially constructed to any angle.

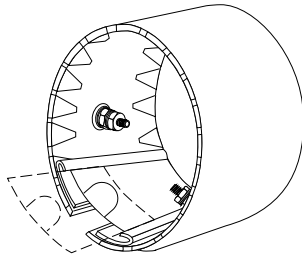
Please specify I.D., width, angle and termination style.



# OPTIONS BAND HEATERS



## REVERSE BAND



Mica Band only

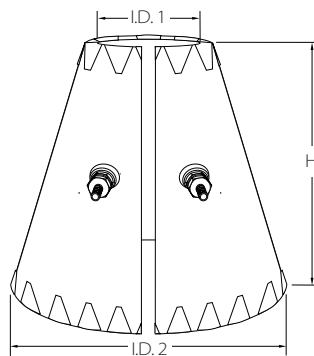
Design allows the heater to be expanded and thus heat from an internal surface.

Available in a variety of clamping styles (please indicate when ordering; shown is the wedge lock low profile clamping).

Available in a variety of termination styles.

Constructed with a fully notched case.

## CONE BAND



Mica Band only

Specified where funnels, chutes, etc. are required to be heated.

Available in a variety of termination styles.

Constructed with a fully notched case.

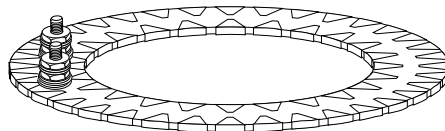
Segmented bands may be required for large sizes or for easy application and removal.

I.D. 1 = minimum I.D.

I.D. 2 = maximum I.D.

H = height

## RING HEATER

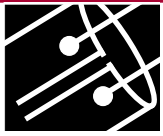


Mica Construction only

Constructed with a fully notched case.

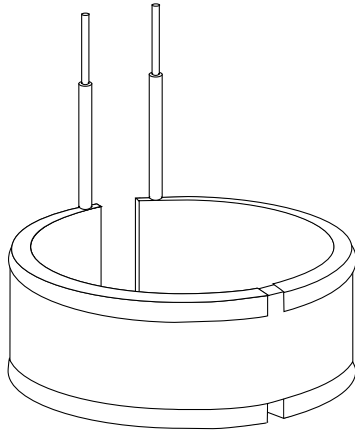
Available in a variety of terminations.

Please specify I.D. and O.D.



# OPTIONS BAND HEATERS

## NOTCHED BAND



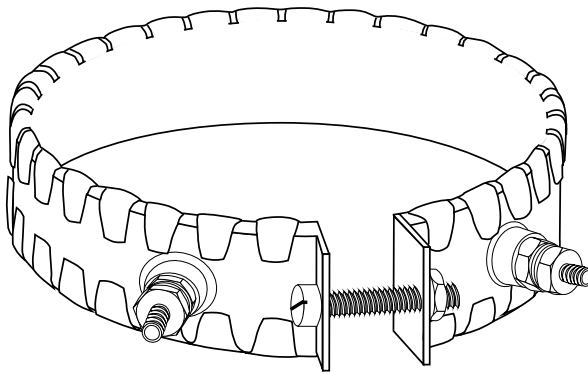
Mica Band only

Available in a wide variety of termination styles.

Standard notch size is  $\frac{1}{8}$ " (3.1 mm).

This Mica Band has a notch on the case to facilitate opening.

## FULLY NOTCHED BAND

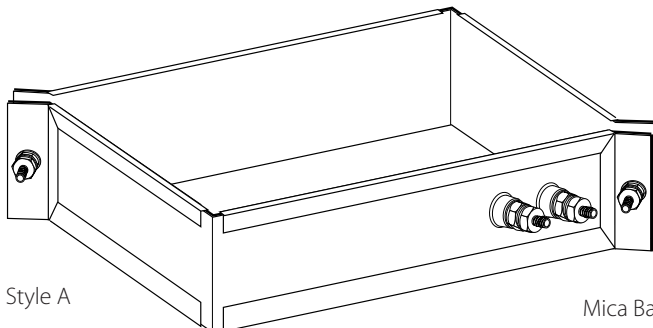


Mica Band only

Used not only in circular applications but can be adapted for irregular surfaces.

Available in a wide variety of termination styles.

## RECTANGULAR BAND

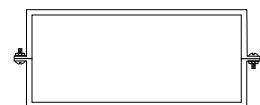


Style A

Mica Band only

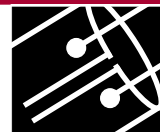
Specify inside dimensions, width dimensions and clamping ears.

Available in a variety of termination styles and two location choices for clamping ears.

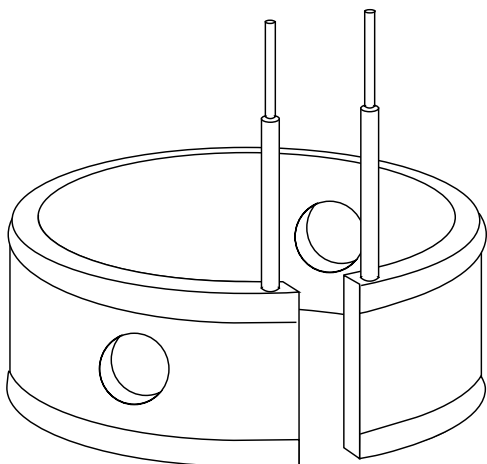


Style B

# OPTIONS BAND HEATERS



## SPECIAL W/HOLES



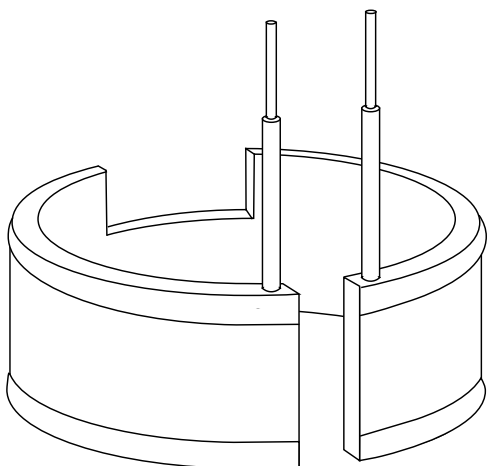
Mica and Better Band

Heaters can be built to satisfy your special requirements. Certain applications require holes for thermocouples to clear tubing, wiring and other obstacles.

These modifications require customer drawings to specify exact diameters and locations of the holes.

Special order only.

## SPECIAL W/NOTCH



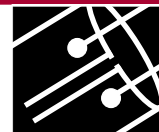
Mica and Better Band

When clearance is a problem with band heater installation, consider requesting slot cut-outs. This can greatly facilitate installation.

Drawing is required with exact dimensions and locations.

Special order only.

# CLAMPING BAND HEATERS



## BAND SHAPE VS. AVAILABLE CLAMP TYPE

### HOW TO USE

To facilitate choosing a clamping style, use the chart below. Cross reference the heater style on the left to the desired clamping style across the top.

Please note that some styles are only available in the Mica Band. These clamping styles are more fully illustrated and described on the following pages.

### HEATER INSTALLATION

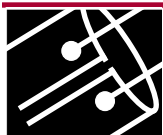
The heater should be tightly clamped around the cylinder. To ensure that the units are tightly clamped, they should be re-tightened after the unit has reached operating temperature and the electrical power has been disconnected.

### CLAMPING

Straps create uniform pressure over the entire circumference of the band, providing intimate contact of the band with the cylinder. Special material used has a low expansion rate to assure tight fit under most conditions. Where straps cannot be used, we adapt strap ends to heaters.

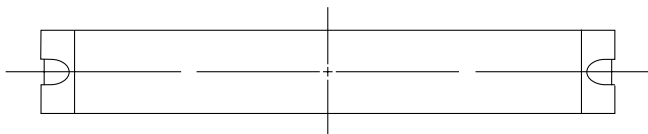
	Strap	Strap End	Ear	Dual Screw Bar Clamp	Wedge Lock	Extension Pad	Full Width Strap	Disc Spring (Belleville)	Spring Bolt	Turn-Buckle
Standard (Round)	•	•	•	•	•		•	•	•	
Sealed	•	•	•	•			•	•	•	
Hinged (Mica)	•	•	•	•			•	•	•	
Expandable	•	•	•	•			•	•	•	
Rectangular (Mica)	•		•			•	•	•	•	
Partial	•	•	•			•	•	•	•	
Reverse					•					•
Square (Mica)	•		•				•	•	•	
Cone Shaped (Mica)		•	•	•	•					
U-Shaped (Mica)	•	•		•		•	•			



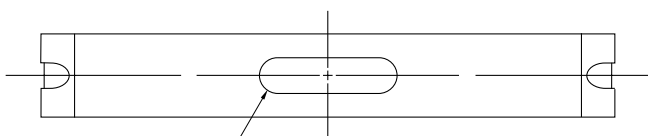


# STRAPS BAND HEATERS

## TYPE 1

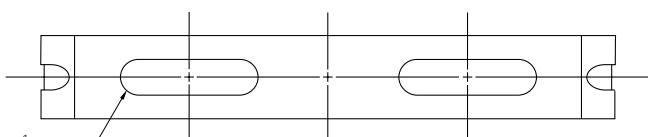


## TYPE 2



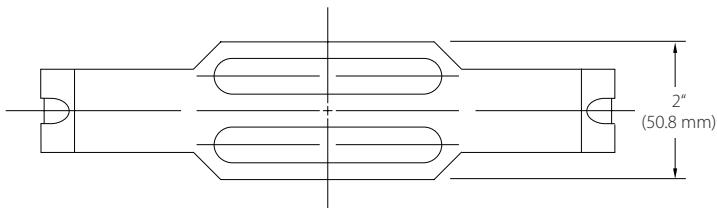
Size dependent on the termination style

## TYPE 3

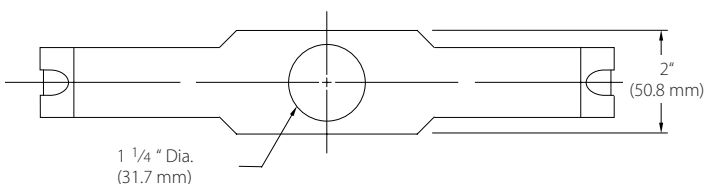


5/8" x 3 1/2"  
(15.8 x 88.9 mm)

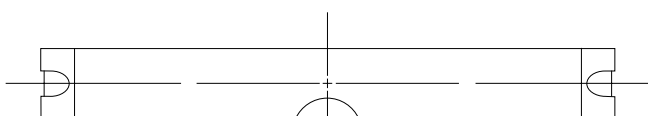
## TYPE 4



## TYPE 6



## TYPE 7



5/8" x 1/4" DP  
(15.8 x 6.3 mm)

## STRAP STANDARDS

Straps can be vastly modified to fit a wide variety of bands. As wider bands are used, multiple straps will most likely be designed in.

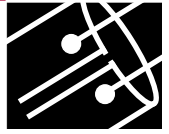
Normally barrel nuts are built into the ends: one threaded, one through hole. Slots shown are to clear termination areas.

Unless otherwise specified, straps are assigned by our engineering staff to best suit each application.

STRAP WIDTH		SCREW
IN	MM	
1/2	12.7	6-32
5/8, 1, 1 1/4	25.4	10-24
1, 1 1/4	31.8	1/4-20 (NOTE 1)

NOTE 1: Standard for 9" (22.9 cm) I.D. or greater band heaters.

# CLAMPING BAND HEATERS



## CLAMPING

Illustrated are the various available styles of clamping for band heaters.

When a band is provided the material is of a low coefficient of expansion type.

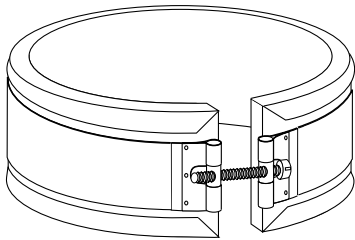
Width of the clamping band or the number used per heater is dictated by the design standards.

There are a variety of clamping mechanisms that can be attached to the band or directly to the heater. The most common forms are the strap and strap ends.

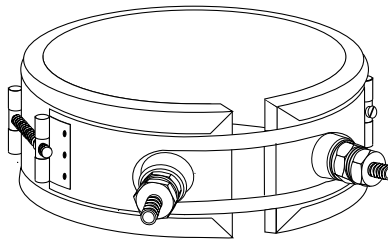
Factors influencing the type and size of clamping are:

- Type of band heater
- Diameter and width
- Termination type and location
- Holes or notches in heater
- Preference of the user

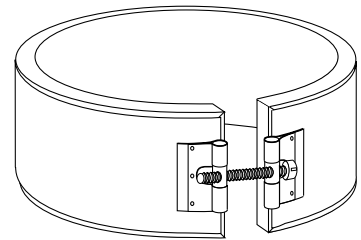
### ONE-PIECE STRAP



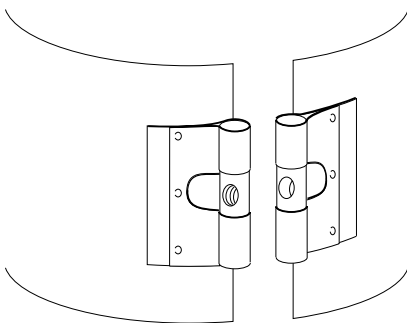
### TWO-PIECE STRAP



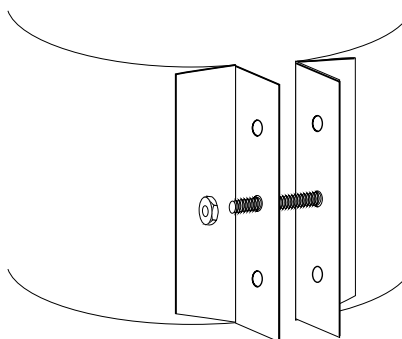
### FULL-WIDTH STRAP



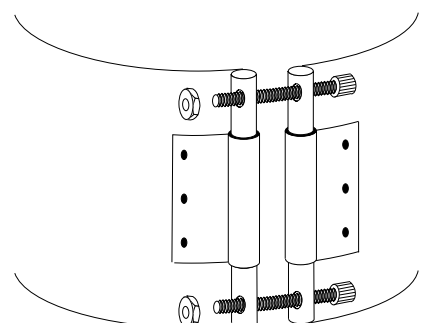
### STRAP ENDS

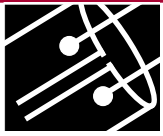


### EAR CLAMPING



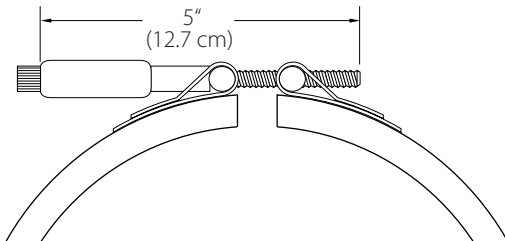
### BAR CLAMPING





# CLAMPING BAND HEATERS

## BELLEVILLE CLAMPING

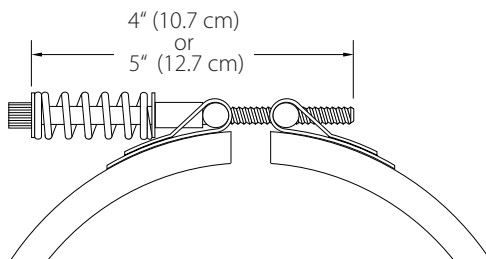


A clamping system is generally selected for use with large diameter heaters where additional compensation of band elongation is required.

Belleville and spring bolt are two styles of available clamping. Selection of style is a matter of the customer's preference.

Belleville clamping comes with a standard  $\frac{1}{4}$  - 20 X 5" (12.7 cm) long screw.

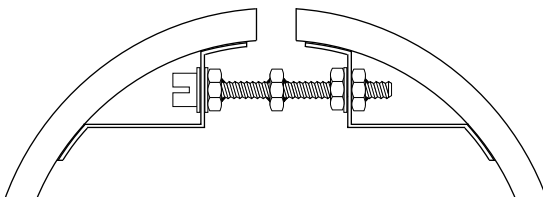
## SPRING BOLT CLAMPING



Spring bolt clamping applies constant tension on the clamping mechanism to compensate for heater elongation once it has been energized.

Spring bolt clamping comes with either a  $\frac{1}{4}$  - 20 X 4" (10.7cm) or  $\frac{1}{4}$  - 20 X 5" (12.7cm) long screw.

## TURNBUCKLE

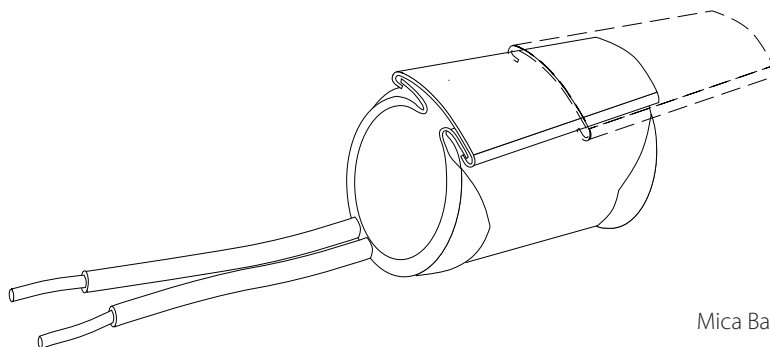


Specified where a heater is used to heat an I.D. surface. Use of this mechanism is governed by the heater diameter and width. Obstructions such as shafts passing along the center line of the heater may present an interference problem.

Contact Fast Heat for review of your requirement.

$\frac{1}{4}$  - 20 X 2  $\frac{1}{2}$ " (63.5 mm) long screw.

## WEDGE-LOCK



Mica Band

Specially designed for mounting where space is limited.

Eliminates the need for straps.

Leads must exit opposite gap. (Limited availability, contact Fast Heat.)

Available for Mica Bands and Better bands, contact Fast Heat for termination styles.